

(12) United States Patent Ruffa

(10) Patent No.:

US 6,503,580 B1

(45) Date of Patent:

Jan. 7, 2003

(54) ACOUSTICALLY ENHANCED PAINT APPLICATION

(75) Inventor: Anthony A. Ruffa, Hope Valley, RI

(US)

(73) Assignee: The United States of America as represented by the Secretary of the

Navy, Washington, DC (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: 09/917,591

(22) Filed: Jul. 30, 2001

(51) Int. Cl.⁷ B06B 1/00

(52) U.S. Cl. 427/600; 204/450; 427/331; 427/385.5; 427/421; 427/428; 427/429;

427/560

(58) Field of Search 427/560, 600, 427/421, 428, 429, 331, 385.5; 204/450

(56)References Cited **U.S. PATENT DOCUMENTS**

3,676,216 A * 7/1972 Abitboul 117/237 5,336,534 A • 8/1994 Nakajima et al. 427/600

* cited by examiner

Primary Examiner-Bernard Painalto

(74) Attorney, Agent, or Firm-Michael J. McGowan;

James M. Kasischke; Michael F. Oglo

ABSTRACT

The present invention is a method of coating a substrate. First, a layer of liquid polymeric coating having a pigment and a solvent is applied to the substrate. An ultrasonic acoustic source is then provided and operated at a frequency of from about above 40 kHz to provide an acoustic pressure field and an it acoustic pressure of above 190 dB and directing the main lobe of the acoustic pressure field toward the layer of liquid polymeric coating. This acoustic pressure field reduces the gradient in and smoothes any uneven surface features in the liquid polymeric coating.

17 Claims, 2 Drawing Sheets

